REMARKS/ARGUMENTS

In this amendment, claims 1, 8, and 15 are amended. No claims are added or canceled. Thus, claims 1-21 remain pending.

Allowable Subject Matter

Applicants note with appreciation the indicated allowability of claim 12.

Interview

Applicants would like to thank the Examiner for extending the courtesy of a telephone interview with counsel, David B. Raczkowski, on July 30, 2007, where the Examiner provided some clarification of the present Office Action.

Rejection under 35 USC § 103(a)

Claims 1-11, 13-2 1 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murai (U.S. Pat. No. 4,866,717) in view of Frederickson (U.S. Pat. No. 5,805,799) and further in view of Tamai (U.S. Pat. No. 6,799,283).

Claim 1 is allowable over the cited references, either alone or in combination, as those references fail to teach or suggest all the elements of claim 1. For example, claim 1 recites:

> *a cycle redundancy check (CRC) engine that generates old cyclic redundancy check bytes based on the old LBA , performs a first exclusive OR (XOR) function only on the old LBA and the new LBA, performs Galois Field multiplication on a result of the first XOR function, and performs a second XOR function on a result of the Galois Field multiplication and the old cyclic redundancy check bytes to generate updated cyclic redundancy check bytes that are based on the new LBA.*

At page 3, the Office Actions states that:

> In addition, as to 1, Murai does not explicitly disclose a CRC that performs a exclusive OR (XOR) function on the LBA and a Galois Field multiplication on a result of the first XOR function, and performs a second XOR function on a result of the Galois Field multiplication and the old cyclic redundancy check bytes to generate updated cyclic redundancy check bytes that are based on the new LBA.

The Office Action then asserts that Frederickson discloses:

> data integrity code including logical block address including a CRC that performs Galois Field multiplication on a result of the first XOR function, and performs XOR function on a result of the Galois Field multiplication (col. 2, lines 37-47; col. 10, lines 60 through col. 11 line 38).

However, this paragraph omits two important limitations in that the first XOR is performed on the old and the new LBA, and that the second XOR is performed on old CRC bytes. Frederickson does not teach either of these limitations.

Fredrickson

Fredrickson is directed to a method of appending LBA information to user data *u* to create a data integrity block (DIB) word x_N to enable data block LBA verification during a block transfer process. *See Fredrickson*, abstract and col. 5 lines 7-22. This is done in a write process using DIB 118 that contains DIB encoder 104 and LBA counter 105. *Id.*, FIG. 1 The user data *u* along with the DIB word x_N are then transmitted through buffer 108 to the storage medium 122. *Id.*, col. 5 lines 47-51. To check that this data is transferred accurately, a DIB/XCHK$_o$ function block 119 repeats the operation of DIB 118 and uses adders 125 and 126 to detect any changes in DIB word x_N. *Id.*, col. 6 lines 28-37. During a read operation, this data integrity check is repeated before and after the buffer 108. *Id.*, FIG. 2. Thus, Frederickson is not directed to efficiently generating "*updated cyclic redundancy check bytes that are based on the new LBA*," as recited in claim 1, but simply to check whether data has changed during transferring.

Furthermore, FIG. 4 shows circuitry usable in DIB blocks 116, 118, or 119. *Id.*, col. 10 lines 1-9. The inputs 201 and 202 to DIB encoder 104 are user data, and not LBA data. *Id.*, col. 10 lines 46-59. The output of DIB encoder 104 corresponds to the output of Galois field multiplier 225, which provides a sum of the user data *u*. *Id.*, col. 11 lines 1-7. Thus, XOR gate array 203 operates on user data and not on LBA data as is asserted. In contrast, claim 1 recites performing "*a first exclusive OR (XOR) function only on the old LBA and the new LBA*."

Additionally, XOR 232, which is the asserted second XOR function, receives the output of the Galois multiplier 225 and the LBA data 207. *Id.*, FIG. 4 and col. 11 lines 8-14. After the last word of user data is encoded, the LBA word is appended by XOR 232, where the output of LBA counters 105 or 111 is provided on LBA_word signal bus 207. *Id.*, col. 11 lines 8-27. Note that only the current LBA word is ever used, including during the first cross-check during a read operation, thus an "*old LBA*" is never used by either XOR. *Id.*, col. 7 line 56 to col. 8 line 4.

The lastword line 208 provides a control signal to allow the LBA data to be received by XOR 232. Thus, XOR 232 receives the output of the multiplier 225 and the LBA data on line 207, and not the lastword data, which might only contain present ECC data anyway. Accordingly, Frederickson does not teach or suggest performing "*a second XOR function on a result of the Galois Field multiplication and the old cyclic redundancy check bytes*," as recited in claim 1. Also, since the DIB blocks 116, 118, or 119 all receive the same input (i.e. the same user data, LBA data, and the same ECC check bytes), there are no updated CRC bytes generated that are based on the new LBA, also as recited in claim 1.

Finally, Tamai simply states that if the sector of data is recorded in the defect log list, that the data may be reassigned to a different LBA. *See Tamai*, col. 17 lines 7-18. Thus, a combination including Tamai would simply recalculate a new CRC using only the new LBA and using the same XOR functions of Fredrickson. Accordingly, there is no teaching or suggestion as to using the old CRC bytes or old LBA data to generate new updated CRC bytes based on the new LBA. Furthermore, there is no teaching or suggestion that this might be done using two XOR functions with the prescribed inputs as recited in claim 1.

For at least the reasons stated above, Applicant submits that claim 1 and its dependent claims 2-7 and 20 are allowable over the cited references.

Applicants submit that independent claims 8 and 15 should be allowable for at least this same rationale. Claims 9-14 depend from claim 8; and claims 16-19 and 21 depend from claim 15 and thus derive patentability at least therefrom.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 415-576-0200.

Respectfully submitted,

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